

REMARKS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 1, 4-10, 53-57 are pending. Claim 1 is independent.

In the Official Action, claims 1, 4-6, 8-10 and 53 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Toshiki (JP 223741), Kim (KR 226831) and Motoki (U.S. Patent Pub. No. 2002/0063258); claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Toshiki, Kim, Motoki and Uemura (U.S. Patent Pub. No. 2003/0107053); claim 8 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Toshiki, Kim, Motoki and Nakao (U.S. Patent No. 5,670,800); claim 54 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Toshiki, Kim, Motoki, Nakao and Williams (U.S. Patent No. 5,045,408). Claims 55-57 were indicated as containing allowable subject matter.

Applicant acknowledges with appreciation the indication of allowable subject matter.

Briefly recapitulating, claim 1 is directed to

A light device comprising:

a GaN-based layer;

a high concentration GaN-based layer formed on the GaN-based layer;

a first metal-Ga compound layer formed on the high concentration GaN-based layer;

a first metal layer formed on the first metal-Ga compound layer;

a third metal-Al compound layer formed on the first metal layer; and

a conductive oxidation preventive layer formed on the third metal-Al compound layer.

Toshiki describes a structure having the following sequence of layers: a p-type GaN layer 7 on a p-type GaAlN layer 6 on a n-type InGaN layer 5 on a n-type GaAlN layer 4 on a n-type GaN layer 3 on a GaN buffer layer 2 on a sapphire substrate 1.

The Official Action asserts that paragraph 0015 of Toshiki describes Applicant's claimed GaN-based layer; high concentration GaN-based layer; and first metal-Ga compound layer. However, as acknowledged by the Official Action, Toshiki does not disclose or suggest Applicant's claimed a) first metal layer formed on the first metal-Ga compound layer; b) third metal-Al compound layer formed on the first metal layer; and c) a conductive oxidation preventive layer. To cure this deficiency, the Official Action applies Kim.

Kim describes a structure having the following sequence of layers: a second epitaxial layer 14 on an active layer 13 on a first epitaxial layer 12 on a semiconductor substrate 11. Fig. 2b of Kim also shows an Al layer 16 formed on a GaTiN layer 15. The Official Action asserts that Kim's GaTiN layer 15 on Al layer 16 corresponds to Applicant's claimed first metal layer on a first metal-Ga compound layer. However, as acknowledged by the Official Action, Kim (and Toshiki) do not disclose or suggest Applicant's claimed a) third metal-Al compound layer formed on the first metal layer; and b) a conductive oxidation preventive layer formed on the third metal-Al compound layer. To cure this deficiency, the Official Action applies Motoki.

Fig. 6 of Motoki shows a structure having the following sequence of layers: a p-GaN layer 17 on a p-type AlGaIn layer 16 on a n-type InGaIn layer 14 on a n-type AlGaIn layer 13 on a n-GaN layer 12. Paragraph [0071] and Fig. 6 of Motoki describes that a conductive transparent electrode 20 is formed on the p-GaN layer 17. The Official Action asserts that p-type AlGaIn layer 16 on n-electrode 22 of Motoki corresponds to Applicant's claimed third metal-Al

compound layer formed on the first metal layer; and that Motoki's conductive transparent electrode 20 on p-GaN layer 17 corresponds to Applicant's claimed conductive oxidation preventive layer formed on the third metal-Al compound layer.

However, contrary to the Official Action, the applied references do not disclose or suggest the invention recited in Applicant's independent claim 1.

First, the Official Action argues that Motoki's conductive transparent electrode 20 on p-type AlGaN layer 16 corresponds to Applicant's claimed conductive oxidation preventive layer formed on the third metal-Al compound layer. However, the Official Action ignores Motoki's p-GaN layer 17. That is, Motoki's conductive transparent electrode 20 is not formed on p-type AlGaN layer 16. Instead, Motoki's conductive transparent electrode 20 is formed on p-GaN layer 17 which is not a metal-Al compound layer. Thus, for a first reason, claim 1 patentably distinguishes over the applied references.

Second, Motoki's conductive transparent electrode 20 is not a conductive oxidation preventive layer. First, Motoki makes no reference of oxidation prevention by conductive transparent electrode 20 or any other layer. Second, Motoki's conductive transparent electrode 20 does not cover an entire surface of p-GaN layer 17. By not covering an entire surface of the next layer, Motoki's conductive transparent electrode 20 would be ineffective as an oxidation preventive layer. Also, Motoki's conductive transparent electrode 20 rests on top of p-GaN layer 17, and is not on a surface of p-type AlGaN layer 16. Thus, any theoretic oxidation prevention by Motoki's conductive transparent electrode 20 would be provided to p-GaN layer 17, and not provided to p-type AlGaN layer 16. Thus, for a second reason, claim 1 patentably distinguishes over the applied references.

Third, the Official Action appears to argue that both Motoki's n-electrode 22 and Kim's Al layer 16 correspond to Applicant's claimed first metal layer. However, Motoki's n-electrode 22 and Kim's Al layer 16 serve very different purposes and abut different types of layers. Both of these layers cannot be equivalent to Applicant's claimed first metal layer. Indeed, Motoki's n-electrode 22 is not "on a first metal-Ga compound layer" as recited in Applicant's claims, or on any other type of layer. Thus, for a third reason, claim 1 patentably distinguishes over the applied references.

Fourth, the Official Action does not clearly state which layers of Toshiki would be replaced or supplemented with which layer of Kim and Motoki. Indeed, it does not appear possible to reasonably shuffle the layers of Toshiki, Kim and Motoki to arrive at Applicant's claimed invention. In KSR v. Teleflex (127 S. Ct. 1727, 1740 (2007)), the Court noted that

"[u]nder the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." The Court also noted that "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103."

However, the Court went on to note that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some *rational* underpinning to support the legal conclusion of obviousness."

Here, however, the Official Action fails to provide a rational reason, due to either a misunderstanding of the invention/references or hindsight reasoning, for replacing or augmenting the layers of Toshiki with the layers of Kim and Motoki. The Official Action states that Motoki is evidence that one skilled in the art would find reasons to modify Toshiki to enhance the

properties and yields of GaN-type LEDs. However, this statement is not a reason to do anything. In fact, the purported "reason" is a circular argument. The Official Action identifies no specific improvement or reasons to modify Toshiki with one or more layers of Motoki (or Kim). That is, the Official Action does not explain how layer X of reference Y makes any improvement to the functionality of Toshiki. Thus, rejection is not rational. Thus, for a fourth reason, Applicant requests that the present rejection under 35 U.S.C. § 103(a) be withdrawn.

Fifth, the proposed combination does not result in viable device. That is, it is not possible to insert Motoki's n-electrode 22 into the middle of the layers of Toshiki and have a functioning device. Indeed, the Official Action does not explain how an electrode of Motoki would function as Applicant's claimed first metal layer. Thus, for a fifth reason, Applicant requests that the present rejection under 35 U.S.C. § 103(a) be withdrawn.

If, on the other hand, Motoki's n-electrode 22 is cited because Motoki's p-type AlGaIn layer 16 is [indirectly] on [metallic] n-electrode 22, the Official Action ignores the fact that claim 1 recites "a third metal-Al compound layer formed on the first metal layer [which is on the first metal-Ga compound layer which is on the GaN-based layer]." While, Motoki's p-type AlGaIn layer 16 is on n-electrode 22, n-electrode 22 is not on a GaN-based layer. N-electrode 22 is on no layer at all.

In effect, the outstanding rejection does little more than attempt to show that parts of the inventive combination of claim 1 were individually known in other arts and to suggest that such a showing is all that is necessary to establish a valid case of *prima facie* obviousness. The PTO reviewing court recently reviewed such a rationale and dismissed it in *In re Rouffet*, 149 F. 3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) as follows:

As this court has stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983); see also *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 USPQ 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996). To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. [emphasis added.]

Applicant's claims recite a specific sequence of layers that cannot be concocted from the applied references. Applicant therefore submits that the current rejection is based on an improper hindsight reasoning. Thus, for a sixth reason, Applicant requests that the present rejection under 35 U.S.C. § 103(a) be withdrawn.

Applicant has considered the remaining applied references and submits the remaining applied references do not cure the deficiencies of Toshiki, Kim and Motoki.

As none of the cited art, individually or in combination, disclose or suggest at least the above-noted features of independent claim 1, Applicant submits the inventions defined by claim 1, and all claims depending therefrom, are not rendered obvious by the asserted references for at least the reasons stated above. MPEP 2141 notes that prior art is not limited just to the references being applied, but includes the understanding of one of ordinary skill in the art. MPEP 2141 further notes that the prior art reference (or references when combined) need not teach or

suggest all the claim limitations. However, an obviousness-type rejection must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. MPEP 2141 goes on to list exemplary rationales that may support a conclusion of obviousness. However, Applicant submits that the Official Action and the applied references present no objective evidence that would support an obviousness-type rejection based on one of these exemplary rationales.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Michael E. Monaco, Reg. No. 52,041, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§ 1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

By 

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